

claim 14 under 35 U.S.C. § 112, second paragraph as being indefinite. The Examiner further states that the term is purely qualitative. Applicants disagree with this conclusion.

One common sense interpretation of "mechanically robust wafer bond", and the interpretation accepted by both the industry and the applicants herein, is a wafer bond that has sufficient mechanical integrity to withstand fabrication into a finished semiconductor device.

Applicants refer the Examiner to page 8, lines 25 through 37, where it is clearly stated that the wafer bond taught by the present invention has low electrical resistivity and good mechanical strength, both in contrast to the quality and nature of a van der Waals bond. Referring to page 12, lines 21 through 26, it is clear that the term "mechanically robust" has a common meaning in this field, and that that meaning includes the idea that a mechanically robust wafer bond is one that contributes to the increased yield of finished and operational devices realized when the mechanically robust wafer bonds of the present invention are used. Therefore, applicants believe that the rejection under § 112 should be withdrawn, as the term "mechanically robust" has a common meaning in this field that is readily obtained and already incorporated in the specification.

In any event new claims 38 through 41 do not include the limitation of "mechanically robust." Therefore, even if the Examiner maintains this objection against claims 14 through 21, it is not applicable against new claims 38 through 41.

Fletcher et al., U. S. Patent No. 5,008,718("Fletcher") is cited as teaching an LED with transparent GaP substrate. The Examiner admits, however, that nothing in Fletcher teaches anything relating to wafer bonding or wafer bonds. Applicants herein are not claiming that the particular material system used

to fabricate the light emitting semiconductor device disclosed in the present invention is unique. Therefore, they readily concede that the material system shown in Fletcher is similar to that used in the present invention. However, the use of an optically transparent, ohmic wafer bond is central to each of the independent claims of the present invention. Fletcher provides absolutely no teaching on this aspect of the present invention.

The Examiner claims that Fletcher, in combination with Jokerst et al., U. S. Patent No. 5,280,184("Jokerst"), makes the independent claims of the present invention obvious. Applicants continue to respectfully disagree.

Jokerst suggest only two ways to bond the semiconductor surfaces together. These are by using van der Waals (electrostatic) forces or metal-to-metal bonding. Neither of these types of bonding produces simultaneously both a transparent and a conductive wafer bond. Jokerst specifically states that the metal-to-metal bonds form a much better electrical bond than "merely a van der Waals bond" (Jokerst, col. 11, lines 61-63).

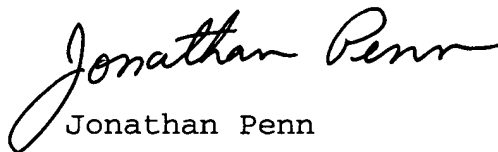
Unfortunately, the metal-to-metal bond recommended by Jokerst to improve electrical conductivity is not transparent. The van der Waals bond is not a good ohmic bond.

Given that each of the independent claims presented by the present application include the limitations of an ohmic, transparent bond, applicants do not understand how Jokerst, even in combination with Fletcher, can make the present invention obvious. Fletcher teaches absolutely nothing about wafer bonding. Jokerst only teaches the creation of a non-transparent, conductive(metal-to-metal bond) wafer bond or a non-conductive(van der Waals bond), transparent wafer bond. Given that the combination of references does not teach a basic element of each of the independent claims, namely a transparent, ohmic

wafer bond, this rejection by the Examiner cannot be sustained.

Review and allowance of pending claims 14 through 21 and newly entered claims 38 through 41 is respectfully requested.

Respectfully submitted,

A handwritten signature in cursive script that reads "Jonathan Penn".

Jonathan Penn

Reg. No. 32,587

Date: August 11, 1995  
Hewlett-Packard Company  
IP Administration  
Legal Department, M/S 20BO  
P.O. Box 10301  
Palo Alto, CA 94303-0890  
408 553-3053